**MARKING SCHEME MATHEMATICS PAPER 121/1**

**ARISE AND SHINE TRIAL 1 EXAM**

**MARCH/APRIL-2020**

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | ½ x 7/2 + 3/2 (5/2 -2/3 )  =7/4 + 3/2 (15-4)  6  =7/4 +3/2 11/6  =74 +11/4  =18/4  deno ¾ x 5/2 ÷1/2  =15/8 x 2  =15/4  18/4÷ 15/4 = 18/4 x 4/15  =18/15  =6/5 | M1  M1  A1 |  |
| 2 | \_\_5\_\_ x 12000 = 4000  6+5+x  \_\_5\_ = 4000  11+x = 4000  12000  60 = 44+4x  4x =16  x=4 | M1  M1  A1 | Equ  Evaluating for x |
|  | 10x = 30.2323  1000x = 3023.2323  -990x = -2993  x=2993  990 | M1  A1 |  |
| 4 | Angle ACB =180o-(70o+10o) angle C/D CA= angle CAB  =180o-80o  =100o  Angle OAD = 180o- (70ox2)  = 40  2  =20o | M1  A1  M1  A1 | Sum of angles of AD  Base angle of isosceles∆ |
| 5 | V = 4/3πr3  = 4/3π x 3 x 3 x 3  36πcm3  = m  v  = 100  36π  = 8.727g/cm3 | M1  M1  A1 |  |
| 6 | \_\_1\_\_ = 0.2737 x10  0.3654  = 2.737  3.24x 2.737  1.8x2.737  4.9266  =4.93 | B1  M1  A1 |  |
| 7 | a) EFD  C  A B  b).Tetrahedron | B1  B1 | Correct diagram |
| 8 | |  |  |  | | --- | --- | --- | | No | std | log | | 47.26  0.8662 | 4.726x101  8.66x101 | 1.6745  1.9375x2 +  1.8750 | | 345.8 | 3.458x102 | 1.5495  3  0.5165 -  2.5388 | | 9.499x10-3 |  | 3.9777 |   9.499x10-3 | M1  M1  M1  A1 | All logs  +ve & -ve  powers |
| 9 | (a). 3x-2y-5=0  2y=+3x+5  2/3y=3/2x-5/2  y=3/2x-2.5  G=3/2,1 ½ or 1.5  b). G2=2/3  y-6=2/3  x-4  3y-18=-2x+8  3y=-2x+8+18  y=-2x+26  3 3 | B1  M1  A1 | Equation |
| 10 | (2x+20/xx-50)  x-50+2x+20=180o  3x-30=180o  3x=210  x=70o  ex<=70-50  =20o  No.of sides =360o  20o  =18 | M1  A1 |  |
| 11 | x-5 – \_\_7(x-5)\_\_  x+5 (x-5)(x+5)  x-5 – \_y\_  x+5 x+5  = x-12  x+5 | M1  M1  A1 | Factorising numerator & Denominator  Simplify |
| 12 | \_5\_ x1000 + 1260  100 105  50+12=62 US$  Total US$(1000+62)  US$ 1062  1US$=Ksh 63.00  US$ 1062x63  1US$  =Ksh.66906 | M1M1  M1  A1 |  |
| 13 | 1. a+2b=c   +2b=  2b=-  2b=x1/2  b=  (ii). (a+b) = +=  /a+b/=    =4.71699 4.72 | M1  A1  M1  A1 |  |
| 14 | L= x π2r+2r  360  348 x 2(0.5) + 2(10.5)=658.83  360 | M1A1 |  |
| 15 | x+11 > 4x-19  -3x > -30  -x >-10  x <10  4x – 19 ≥ 2 – x  5x ≥ 21  x ≥ 4 1/5  integral values 5,6,8,9 |  |  |
| 16 | |  |  |  |  | | --- | --- | --- | --- | | 2 | 27 | 30 | 45 | | 3 | 27 | 15 | 15 | | 3 | 9 | 5 | 5 | | 3 | 3 | 5 | 5 | | 5 | 1 | 5 | 1 | |  | 1 | 1 |  |   LCM=2x33x5  =270  Q=270+3=  =273 | M1  A1 | For table /factorisation |
|  | **SECTION B** |  |  |
| 17 | (a)Let the length of train be=x  Distance covered =5+x  R.S=30-25=5k/hr  =5x5 = \_25\_  18 18m/s  Time = 1 ½ min = 90s  5+x =25 x 90  18  x=120m  b). Time = 4 48/60 = 0.08hrs / 240+48=288 sec  60  Distance = 25 x 288  18  =400m  c). Distance train travelled in 45mins  d= 45 x 25 x 4  60  = 18.75km  R.S = 5km/hr  to catch up t=18.75  5  =3.75hrs | M1  M1  A1  M1  M1  A1  M1  A1  M1  A1 | Getting RS  Changing speed to m/s  time in s |
| 18 | 1. **75-79**  |  |  |  |  |  | | --- | --- | --- | --- | --- | | **class** | **Mid pts** | **f** | **fx** | **C+** | | 60-64 | 62 **B1** | 2 | 124 **B1** | 2 | | 65-69 | 67 | 3 | 201 | 5 | | 70-74 | 72 | 6 | 432 | 11 **B1** | | 75-79 | 77 | 11 | 847 | 22 | | 80-84 | 82 | 8 | 656 | 30 | | 85-89 | 87 | 7 | 609 | 37 | | 90-4 | 92 | 2 | 184 | 39 | | 95-99 | 97 | 1 | 97 | 40 | |  |  |  |  |  |   Mean x =    =3250  40  = 81.25  Median class 70-75  74.5 + 40 – 11 5  \_2\_\_\_\_  11  78.59 | M1  A1  B1M1  A1 | For 74.5 |
| 19 | (a).    L=  = 9.372  = 9.4M  (b). 7.2+h =2  h  h=7.2m  L = = 18.74m  L = =9.37.2m  (πx12x18.74) – (πx6x9.372)  =529.82m2  c). (1/3π x122x14.4) – (1/3π x62x7.2)  =1900=4m3  19.00.04x1000  =1900.04m3  (d). 500x40  20.000L  1900040  20000  =95.002 days | M1  A1  M1  A1  M1  A1 | FT |
| 20 | No. of suits be x  57600 per suit in whole sale  x  57600 – 480 = 57600  x x+4  57600 – 57600 = 480  x x+4  57600x + 230400 -5700x = 480x2 + 1920x M1  480x2 + 1920x = 230400  x2 + 4x = 480  x2 + 4x = 480  x2+4x 4 2 = 480 + 4 2  2 2  (x+2)2 = 484  x+2 = ±22  Hence x = 22 – 2 or -22 -2  x = 20 or -22 ignore  No of suits 20  (b). B.P = 57600 = 2880  20  % profit =\_720\_ x 100%  2880  =25% | M1  M1  M1  M1  M1  A1  B1  M1  M1    A1 |  |
| 21 |  |  |  |
| 22 | (a). Sin = sin 30o  5 4  Sin = 5 sin 30o  4  =38.68o  Obtuse angle 180 – 38.68 = 141.32  (b). <ABD = 180o – (38.68x2)o  = 102.64o  AD2 = 42+42-2x4x4 Cos 102.64o  AD = 6.24M  c). <DBC =180o – (30 +141.32)o  = 8.68  Sin 8.68 = Sin 30o  DC 4  DC = 1.28M  (d). Area of ∆ABC  ½ x4x5 sin (8.68+102.64)o  =10 sin 111.32  9.32m2 | M1  A1  B1  M1  M1  A1  M1  A1  M1  A1 | FT  Accept alternative  method |
| 23 | (a)     1. Area ½ x 50 x 120 = 4800   ½ (120+100)60 = 6600  ½ (100+60)200 =16000  ½ x 60 x 60 =1800  ½ x220 x 160 =17,600  ½ (160 + 100)20 =2 600  ½ (100 + 120)60 = 6600  ½ x 100 x 120 =\_6000\_  62000M2  62000  10000  = 6.2x80,000  Cost =Ksh.496,000 | M1  M1  M1  A1  M1  A1 | B1 –for xy  All offsets –B2  Shape completed B1 |
| 24 | (a)(i) 5x + 2y =2400 B1  2x + 4y = 3200 B1  (ii). = B1  1/16  = 1/16  M1  =1/16M1  =  x=200/=, y=700/= A1 (both)  (b). Buying price = (16x200) + (20x700) M1  =sh.17,200 M1  Selling price = (120 x 16x200) + (115 x 20 x 700)  100 100  =3840 + 16,100  =sh.19,940  % profit = 19940 – 17200 x 100 M1  17200  =15.93% A1 |  |  |